

A Hamilton-Jacobi equation in space of probability measures, in connection with the Onsager-Joyce-Montgomery theory

Prof. Dr. Jin Feng (Department of Mathematics, University of Kansas, USA)

The Onsager-Joyce-Montgomery theory concerns equilibrium statistical mechanics for 2-D turbulent vortex dynamics. In an effort to rigorously establish this theory, we encounter a special Hamilton-Jacobi equation in space of probability measures. I will outline an overall program, connecting large deviation theory and large time behavior of the concept of entropy with Hamilton-Jacobi and Eikonal equations. Then I will focus on a uniqueness result (comparison principle) of the equation using techniques from mass transportation and optimal control. The talk is based on joint works with several collaborators.